

# Waste and Toxics

In 1987, the Mobro 4000, a barge carrying 3,168 tons of garbage from Islip, New York, was turned away by six states and three countries. After traveling 6,000 miles over six months in search of a disposal site, it returned to Islip where its load was incinerated. The now infamous barge helped raise America's consciousness about waste disposal. Similarly, the events at Love Canal, a neighborhood built on a toxic waste site in Niagara Falls, New York, focused national attention on the need for proper tracking and disposal of toxic and hazardous wastes. In 1977, leakage from the site was discovered, posing serious public health risks and resulting in the evacuation of area residents. While portions of the site have been cleaned up and the community restored, the most contaminated portions remain uninhabitable.



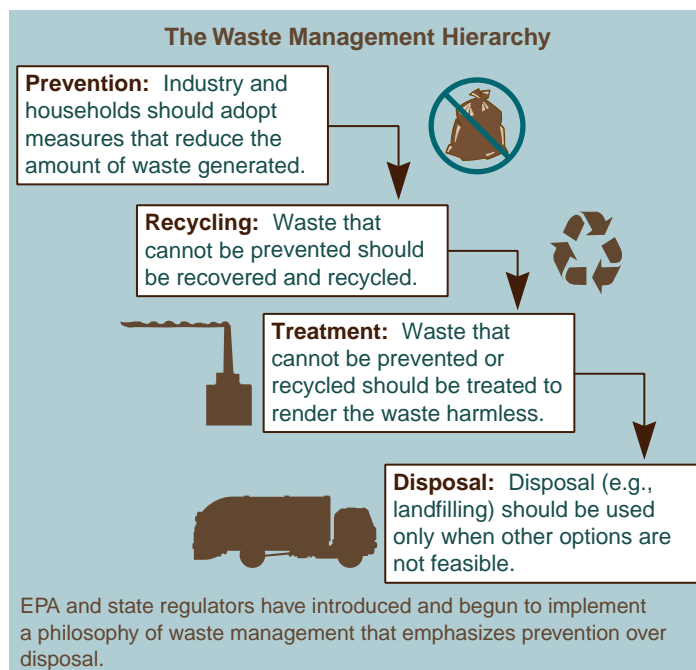
One of the undesirable by-products of increasing population and economic growth, is the generation of hazardous and non-hazardous waste, from households as well as industrial and commercial facilities. EPA classifies wastes as hazardous based on physical properties—whether they are flammable, corrosive or explosive—and chemical composition.

Since the 1970s, we have made significant improvements in reducing the amount of waste produced, managing it more safely, and responding to cases in which waste was not handled properly in the past.

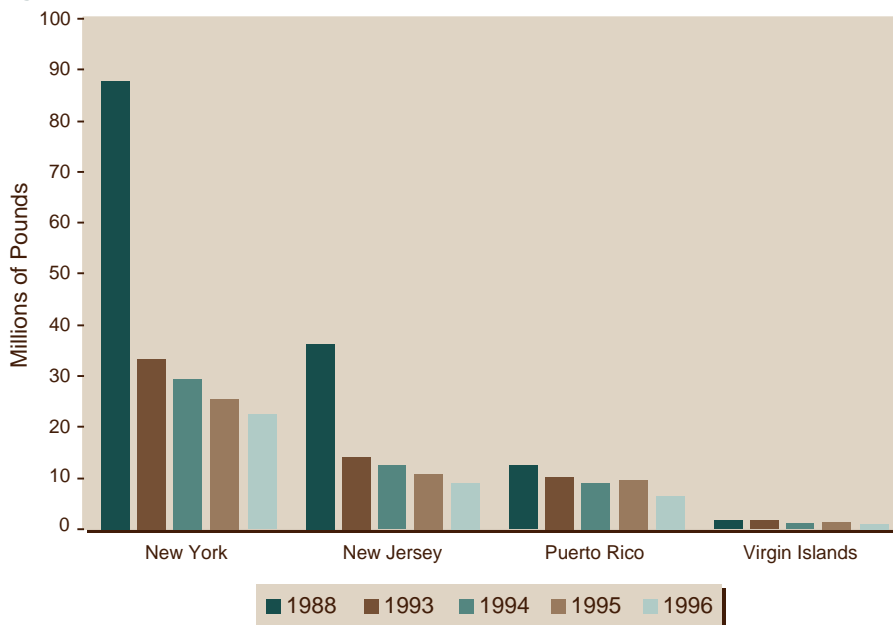
Under the Resource Conservation and Recovery Act (RCRA), first passed in 1976, EPA and the states have developed regulations governing the safe management of hazardous and nonhazardous wastes, from their production to their ultimate disposal (cradle to grave). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly referred to as Superfund, primarily addresses the cleanup of sites where waste has been improperly disposed of in the past.

## Proper Waste Management

Reducing the production of hazardous and nonhazardous waste is the most effective way to minimize risks to human health and the environment. For those wastes that are produced, EPA emphasizes reuse and recycling as favored alternatives over treatment and disposal.



## Significant Reductions in Toxic Releases



Source: U.S. EPA Toxics Release Inventory.

Figure 13

## Pollution Prevention

Pollution prevention is the prevention or reduction of waste at the source. EPA promotes prevention activities by providing technical assistance to waste generators, funding demonstration programs, encouraging regulatory flexibility and empowering the public with information about industrial waste and emissions.

One of the Agency's most successful communication tools is the Toxics Release Inventory (TRI), established under the 1986 Emergency Planning and Community Right to Know Act (EPCRA). The TRI database provides information about releases into the environment of over 600 toxic chemicals from industrial facilities. Since 1988, when EPA began receiving

TRI data, significant reductions in toxic chemical releases to air, water, and land in Region 2 have been realized (Figure 13). The total volume of TRI chemicals released to the environment has decreased by more than 90 million pounds since 1988.

Companies have learned that pollution prevention is good for business as well as for the environment. Through WasteWiSe, an important EPA prevention program, participating companies voluntarily reduce their generation of municipal solid waste, often at significant cost savings. Nationwide, WasteWiSe firms prevented the release of more than 453,000 tons of solid waste, saving millions of dollars. Xerox, a WasteWiSe partner with administrative, manufacturing, and research facilities in Region 2, accepts used printers and photocopiers as part of its "Design for the Environment" efforts. In 1996, the company diverted more than 75 million pounds from disposal by disassembling and salvaging usable parts for re-manufacture. In other efforts to reuse materials, Xerox launched the "Toner Container Return Program" on Earth Day 1995. Through this program, customers rebox empty toner containers in their original packaging and return them with the shipping costs paid by Xerox. The containers are then cleaned, inspected, and refilled or recycled. One million pounds of plastic and other materials were reused in 1996.



## Managing Hazardous Waste

EPA and authorized states are responsible for managing hazardous wastes produced by industrial and commercial facilities. Through its program under the Resource Conservation and Recovery Act, EPA emphasizes recycling as the preferred tool for managing hazardous waste. In

Region 2, data available from the TRI database demonstrates the importance of recycling and energy recovery in the management of hazardous waste. Between 21 percent (the Virgin Islands) and 79 percent (New York) of the hazardous materials transferred in 1995 from Region 2 facilities for further management was either recycled or recovered for energy use (Figure 14).

## Reducing Household Hazardous Waste

We generally associate the production and release of hazardous chemicals with commercial and industrial facilities. However, households contribute to the stream of hazardous materials with the disposal of items such as paint and paint-related products, pesticides, pool chemicals, drain cleaners and car care products. Each person in the United States produces an average of four pounds of hazardous waste each year, with a national total of about 530,000 tons per year. These waste products, if disposed of carelessly, can create environmental and public health hazards, such as groundwater pollution.

Household hazardous wastes are not regulated under federal and state laws. But they can be greatly reduced or eliminated by the use of safe, alternative products. EPA provides information on its web site describing alternatives for a number of commonly used, yet very hazardous products, including air fresheners, disinfectants and germicides, drain cleaners and oven cleaners.

## Managing Non-hazardous Waste

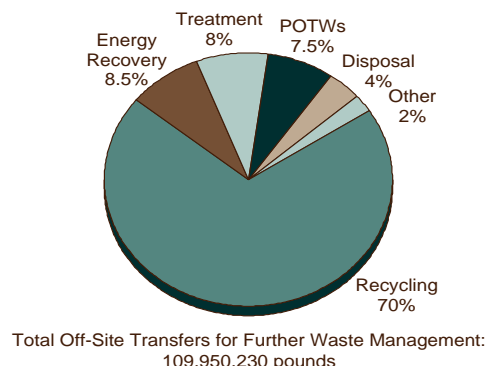
States are generally responsible for managing solid non-hazardous waste—including paper, packaging, food scraps, yard trimmings, cans, bottles and tires. Americans produce an average of 4.4 pounds of solid waste per person per day, as opposed to 3.3 in 1970. Again, emphasizing reducing and reusing waste first, recycling, burning trash for energy recovery, and landfilling are all components of solid waste management.

Since 1989, the amount of waste recycled and incinerated has increased, while landfill disposal has decreased (Figure 15). In both New York and New Jersey, increased recycling rates have corresponded with a decreased reliance on landfills. Recycling rates and curbside collection programs for both states are among the highest in the country. New York and New Jersey have taken additional steps to reduce the amount of waste landfilled, including banning vehicle battery disposal, keeping automobile tires out of New York landfills, and prohibiting the disposal of leaves in New Jersey landfills. New York is among only 10 states with a beverage container refund law or “bottle bill.”

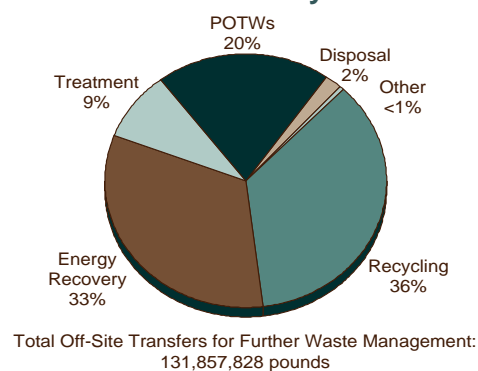
In 1993, federal regulations mandated new landfill standards, requiring, among other things, the installation of liners to prevent soil and ground water contamination. As a result, many small landfills have closed, replaced by a smaller number of larger regional landfills. Increases in waste recycling and trash incineration have also contributed to a decline in the amount of trash that is going to landfills. The number of landfills in Region 2 has decreased from 411

### Hazardous Waste: Where It Goes

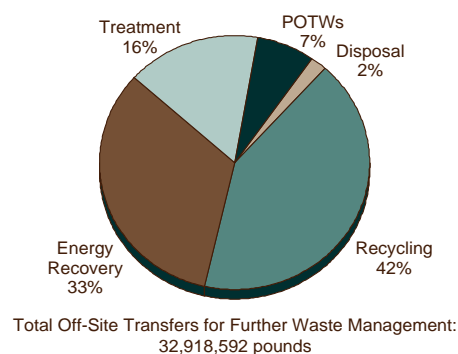
#### New York



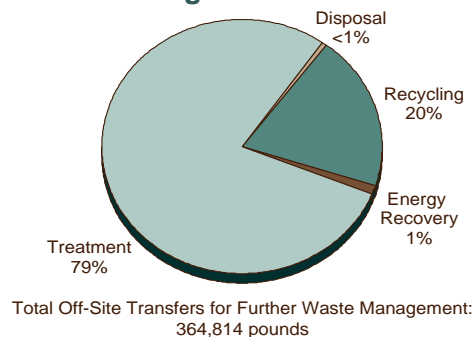
#### New Jersey



#### Puerto Rico



#### Virgin Islands

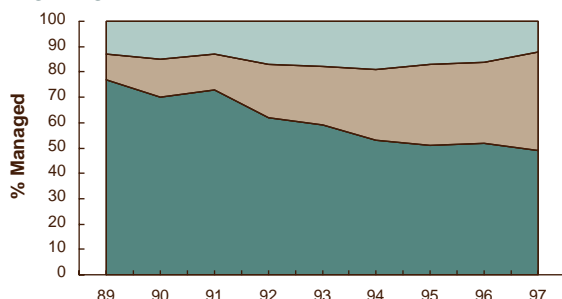


POTW = Publicly-Owned Treatment Works

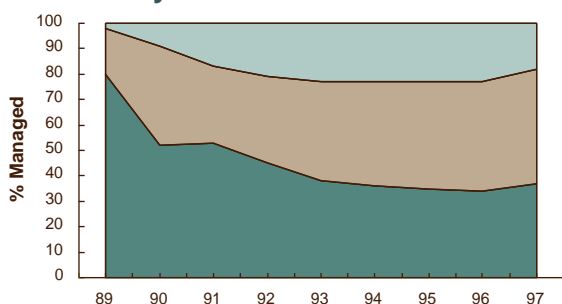
Source: U.S. EPA Toxics Release Inventory.

Figure 14

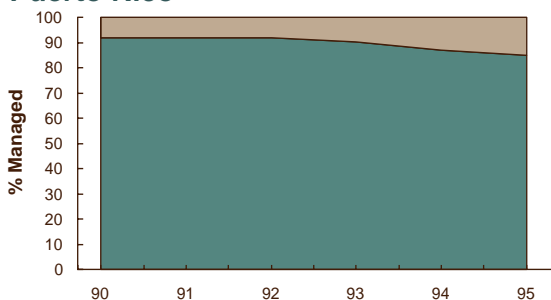
## Solid Waste Management New York



## New Jersey



## Puerto Rico



% Incinerated
  % Recycled
  % Landfilled

Source: Biocycle Magazine.

Figure 15



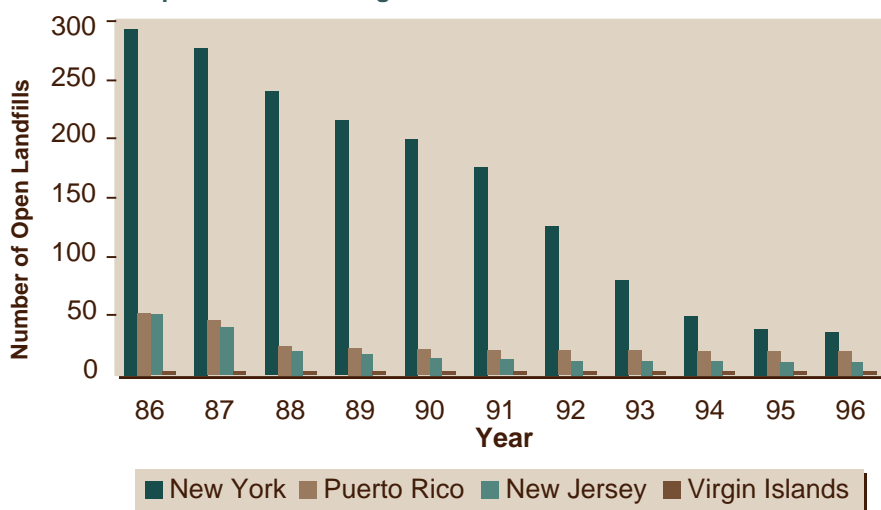
S.C. Delaney/EPA

in 1986 to 82 in 1996 (Figure 16). Many of the closed facilities were small local landfills that were unlined, poorly sited, and lacked the resources to upgrade. The Fresh Kills landfill, the only remaining municipal solid waste landfill in New York City, is scheduled to close in 2001. New York City is currently developing long-term plans for the enormous amount of garbage generated in the city each day.

Progress toward effective waste management has been more limited in the Commonwealth of Puerto Rico and the U.S. Virgin Islands than elsewhere in the Region. Both island communities face unique constraints. There are no solid waste incineration facilities on the islands; less land suitable for siting landfills exists; less soil is available for daily landfill cover; waste export to the continental U.S. is generally too expensive; and fewer markets for recyclables are available.

Despite these problems, Puerto Rico has improved its solid waste management over the past few years. The number of operating landfills has been reduced from 62 in 1986 to 32 in 1996, with recycling rates increasing from eight percent in 1990 to 15 percent in 1995. Less progress has been made in the Virgin Islands, where most garbage is sent to its two operating landfills. The Virgin Islands currently recycles very little, but plans to begin measuring recycling rates with a goal of increasing recycling. For more information on solid waste issues and how they are being addressed, see *The Unique Caribbean Environment* chapter.

## Number of Open Landfills in Region 2



Source: New York Department of Environmental Conservation; New Jersey Department of Environmental Protection; Puerto Rico Solid Waste Management Authority; Federal Register.

Figure 16



# Superfund

## Cleanup of Spills and Hazardous Waste Sites

The poor and improper disposal of hazardous waste in the past has resulted in sites throughout the country that now pose a threat to human health and the environment. Through the Superfund program, EPA screens suspected hazardous waste sites to determine the extent and type of response necessary. These actions include site inspection and ranking to determine the potential threat to human health or the environment, the immediate removal of leaking drums or toxic materials from abandoned facilities, and long-term cleanup actions for highly complex contaminated sites. Since the Superfund program began, almost 3,000 sites screened in Region 2 were judged not to require further action by the Superfund program.

## Removal Program

For sites that require further action, EPA determines if short-term removal actions or longer-term remedial actions are needed to clean up the site. Removal actions are generally taken to remove leaking drums or tanks, provide alternate water supplies, remove contaminated surface soils or sediments, or demolish and remove contaminated buildings or structures. In Region 2, EPA has conducted 487 removal actions to date and parties responsible for the pollution have conducted 120.

## National Priorities List

The most seriously contaminated sites are placed on the Superfund National Priorities List (NPL). Nearly 20 percent (221 sites) of all NPL sites in the nation are in Region 2. As of March 1998, there were 119 sites in New Jersey (plus two sites proposed for NPL listing), 90 in New York, 10 in Puerto Rico, and two in the Virgin Islands. Sites on the NPL require extensive, long-term cleanup and remain on the NPL until cleanup activities have been completed.

## Economic Gain Through Waste Minimization

*"The tremendous result of this study demonstrates the value of partnerships between industry and government. As we face a more competitive global market, we must work together to solve environmental challenges."*

—Paul Tebo, Vice President, Safety, Health and the Environment, DuPont

One of the most attractive features of pollution prevention is the potential for "win-win" outcomes—those where a facility can reduce pollution and simultaneously lower its own costs. An example of such an outcome occurred as a result of a lawsuit filed by EPA against the DuPont company's Chambers Works chemical plant in Deepwater, New Jersey—one of the largest chemical manufacturing facilities in the United States.

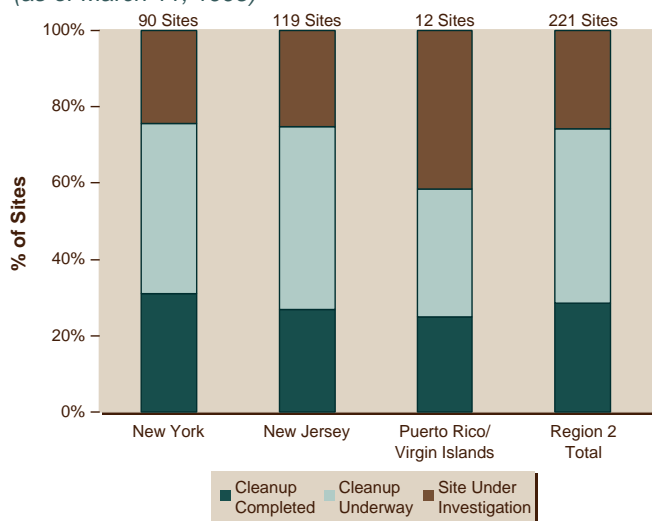
As part of a 1991 settlement between DuPont and EPA, in addition to paying a substantial penalty for past RCRA violations, DuPont agreed to conduct an internal audit of its waste-generating activities and evaluate pollution prevention opportunities at the facility. In consultation with EPA, company officials identified 15 manufacturing processes with pollution prevention potential. The individual project ideas focused on reducing solvent, tar, and other chemical wastes. One project even reduced packaging waste by introducing reusable chemical containers in place of disposable 55-gallon drums.

The outcome of the EPA/DuPont efforts is striking. By late 1993, seven of the 15 projects were implemented. DuPont has reduced wastes from the affected processes by 73 percent. Once all projects are in place, DuPont expects that wastes from all 15 processes will be cut roughly in half. More importantly, this waste reduction will yield benefits to the company as a result of reduced material waste disposal costs. The total up-front investment for all 15 projects is expected to be about \$6 million, while DuPont anticipates annual savings of about \$15 million. Finally, the success realized at the Chambers Works facility may be relevant at other locations. DuPont is making the study publicly available as an example of how technological advances can be shared to further waste minimization progress.



Jenine Tankoos

## Superfund Sites: Cleaned Up or Underway (as of March 11, 1998)



Source: U.S. EPA Region 2, Emergency and Remedial Response Division.  
Figure 17

After a thorough investigation of each site and extensive public input, EPA identifies cleanup alternatives and selects the most appropriate remedy. At some sites, long-term solutions, such as continued pumping of contaminated ground water, may be required. Once a remedy is selected, EPA, the state, or the potentially responsible parties (with EPA or state oversight) implement the cleanup, generally by treating or removing contaminated soils and sediments, and/or preventing the spread of contaminated ground water. Public participation at all stages of the process—from remedy selection to site closure—is a hallmark of the Superfund program. Since the Superfund program began in 1980, the cleanup of NPL sites in Region 2 has resulted in tremendous environmental benefits, including:

- **Soil and Sediment Cleanup:** remediation of billions of pounds of contaminated soils and sediments. These actions have enabled previously contaminated land to be used for other purposes, and for streams, rivers and wetlands to be restored.
- **Cleanup of Contaminated Ground Water:** the treatment of billions of gallons of ground water contaminated with hazardous substances, preventing the spread of contaminated ground water with the goal of restoring aquifers to beneficial uses.
- **Capping of Toxic Landfills:** the placement of caps over hundreds of acres of hazardous waste landfills. Caps, along with proper management of water seeping from landfills, protect people and ecosystems from direct exposure to waste and prevent ground water contamination.
- **Elimination of Unacceptable Risk Posed by Improper Waste Disposal:** removal or treatment of hundreds of thousands of gallons of products from abandoned sites.

Of the Region's 221 Superfund sites, 28 percent have been cleaned up and taken off the NPL, or have all construction completed and are in the midst of long-term remedial action. In addition, cleanup activities, either design or construction, are underway at approximately 58 percent of the 221 sites. Approximately 13 percent of the Region's NPL sites are under study or are awaiting study. The sites awaiting study have generally just been listed on the NPL or are currently proposed for listing (Figure 17).

## Funding for Superfund Cleanups

Under the Superfund program, parties responsible for the pollution are required to clean up and/or pay for contamination resulting from their contribution to a particular site. However, in an emergency situation, or when those responsible cannot be found or will not cooperate, EPA responds. Under these circumstances, EPA finances the cleanups from the Superfund Trust Fund and when possible pursues the responsible parties through enforcement action. To date, the Region 2 Superfund program has spent over \$3.75 billion to remediate hazardous waste sites—about half spent by the federal government and half by responsible parties.

## Restoration of a Superfund Site in Cold Spring, New York

The Marathon Battery Superfund Site in Cold Spring, New York, exemplifies a cleanup resulting in the return of land to beneficial uses. After the cleanup was completed, EPA entered into an agreement with the Scenic Hudson Land Trust, an environmental organization that acquires and preserves land along the Hudson River, to purchase the property. The group plans to preserve this scenic, historic, and recreational asset.

## Brownfields Economic Redevelopment Initiative

Many communities throughout the nation are grappling with the question of how to return underutilized or abandoned urban property to productive use. In many cases, redevelopment of these properties, which the EPA refers to as brownfields, is complicated by real or perceived environmental contamination. In response, EPA has implemented the Brownfields Economic Redevelopment Initiative—a multi-faceted program providing technical, legal, informational and direct assistance to those interested in redeveloping these sites. At the center of the initiative in Region 2 are the 26 Brownfields Assessment Demonstration Pilots (Figure 18).

The pilots are designed to evaluate the political, scientific and economic issues that can arise when trying to identify or revitalize abandoned sites. The Newark pilot project, for example, is identifying sites that illustrate the full range of obstacles that might arise in developing a brownfield site and ways to overcome them. The Rochester pilot is examining the utility of a revolving loan fund for redeveloping numerous sites.

A Brownfields National Partnership was established in May 1997 to coordinate local cleanup efforts and the resources of more than 15 federal agencies involved in redevelopment efforts. Sixteen communities were chosen as models demonstrating the benefits of collaborative brownfields cleanup efforts. Two of these “Brownfield Showcase Communities,” in Trenton, New Jersey and Glen Cove, New York, are located in Region 2.

Successful brownfields projects involve people from the public and private sectors. One example is the area-wide site assessment project in Newark, which has been made possible by a collaboration of residents, the city, the state of New Jersey and EPA. Other success stories include numerous sites where local, state and federal agency resources, as well as public-private partnerships have set the stage for redevelopment and the creation of jobs. In Buffalo, New York, a former brownfield was transformed into a hydroponic tomato farm, creating 175 full time jobs. The Region’s Brownfields Initiative is actively strengthening federal, state, city and impacted community partnerships to meet the common goal of recycling brownfields into productive, sustainable use.

To help promote public involvement, Region 2 has established a Brownfields Toll Free Hotline; a Quarterly Community Involvement Report which is available to the public; and the Region 2 brownfields web page.



Region 2 Brownfield Assessment Demonstration Pilots.

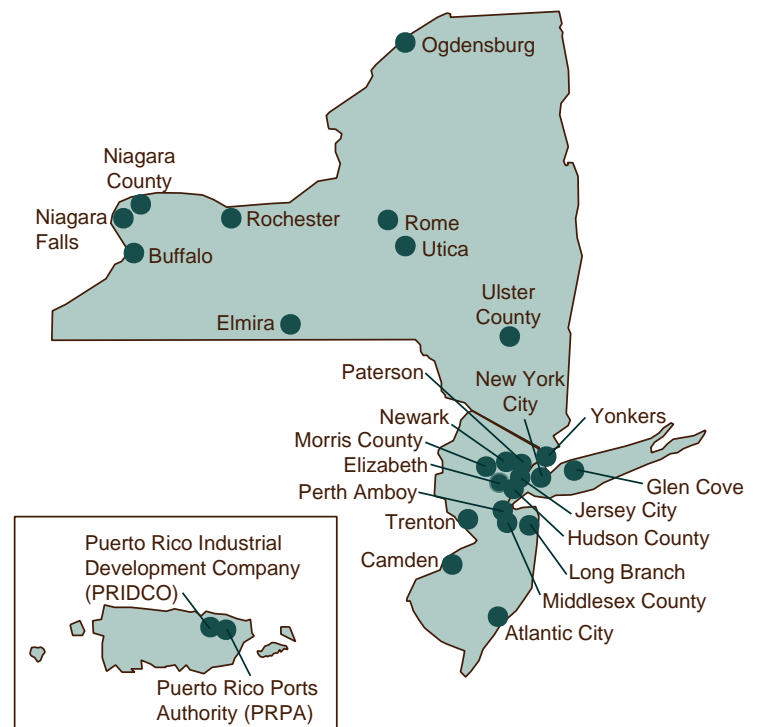
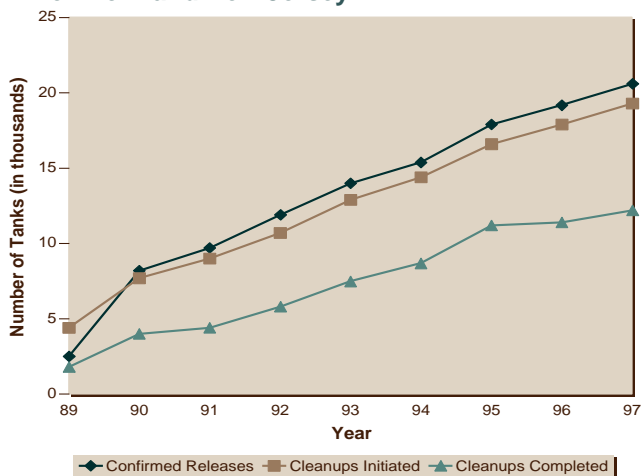


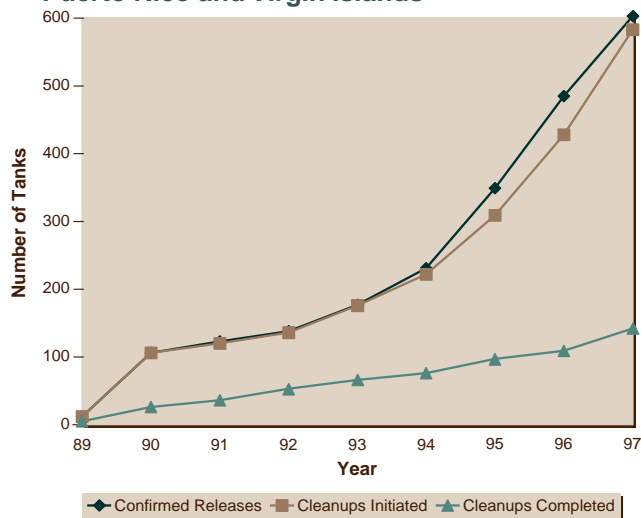
Figure 18

## Leaking Underground Storage Tanks

### New York and New Jersey



### Puerto Rico and Virgin Islands



Source: U.S. EPA UST/LUST Performance Measures.

Figure 19

### Things You Can Do

- Select products with the least packaging.
- Select products with packaging made from the types of materials your community collects in its recycling program.
- Select products made from recycled materials.
- Be sure to dispose of hazardous materials from your home properly. Try to avoid using products containing materials considered to be hazardous.
- Find out about toxic releases from facilities in your community and encourage those companies to produce and release less waste.

## Underground Storage Tanks

Releases from underground storage tanks (USTs) represent another source of contamination. As of 1997, there are over 75,000 tanks (excluding home heating oil tanks) in Region 2, containing petroleum products. Leaking USTs can threaten human health and safety by causing fires or explosions or contaminating soil and ground water. A leak of one gallon of gasoline can render a million gallons of water undrinkable. In Region 2, 38 percent of the population relies on ground water as the principal or partial source of drinking water.

The number of confirmed releases reported in Region 2 has been growing at a rate of approximately 6 percent per year since 1989 (Figure 19). One of EPA's goals is to close the gap between the number of confirmed releases from USTs and the number of cleanups completed. Significant progress has been made in the quality of tank installation and construction, leak detection monitoring systems, and the pace at which cleanups are completed. There is still work to be done to complete on-going cleanups more quickly and initiate cleanups at sites where releases have been detected.

### For More Information

**EPA Hotline on RCRA, Superfund, and Community Right to Know:** 800-424-9346

**Brownfields Hotline:** 800-225-7044

**Internet Home Page for EPA Office of Solid Waste and Emergency Response:**  
<http://www.epa.gov/epaoswer>

**Internet Home Page for EPA's Brownfield Program:** <http://www.epa.gov/swerosps/bf/>

**Internet Home Page for Region 2 Superfund:** <http://www.epa.gov/region02/superfnd.htm>

**Earth's 911:** 800-CLEANUP  
<http://www.1800cleanup.org>